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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/547,445	06/08/2006	Arun Wagh	166538025US1	1664
25996 7590 09/09/2008 PERKINS COIE LLP PATENT-SEA P.O. BOX 1247 SEATTLE, WA 98111-1247				
EXAMINER				
HAN, SHENG				
ART UNIT		PAPER NUMBER		
4162				
MAIL DATE		DELIVERY MODE		
09/09/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/547,445

**Applicant(s)**

WAGH ET AL.

**Examiner**

SHENG HAN

**Art Unit**

4162

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 8/29/08.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 3, 5, 8, 9, 13, 16-18, 22-24, 27, 28, 30, 32-34 and 38-49 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 5, 8, 9, 13, 16-18, 22-24, 27, 28, 30, 32-34 and 38-49 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 August 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-848)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 4/3/08, 12/11/06, 10/31/06
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Specification***

The attempt to incorporate subject matter into this application by reference on Page 4, col. 31 and on page 7, col. 25 is ineffective because both places are missing the serial numbers. See also Amendments to the Specification, pg. 2, para. 0001.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Specifically, the phrase "wherein the quantity of water removed is . ... of equal to or less than 90% measured by weight" is unclear whether the "by weight" refers to the original amount of water in the substance or the entire weight of the substance, including the water, or the entire amount of the substance without the water. Please clarify.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Art Unit: 4162

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 8, 9, 13, 27, 28, 32, 38 and 41, 43-49 are rejected under 35 U.S.C. 102(b) as being anticipated by Wagh (5645518). Wagh teaches a method for stabilizing wastes using phosphate ceramic, water, and an oxide binder (abstract). Wagh teaches heating at 100°C (claim 7).

Wagh further teaches that the slurry is heated to a temperature anywhere less than 100°C (col. 6, line 29).

It would be inherent that some water would evaporate in the solid hydrated chemically bonded phosphate ceramic matrix at 100°C (claim 7).

Regarding Claim 3, since Wagh teaches heating at 100°C (claim 7), it is inherent that water would evaporate. It is also below a temperature where non-water compounds would become volatile (Applicant's specification, PG Pub, para. 0045, under 200°C).

Regarding Claim 8, Wagh teaches heating at 100°C (claim 7). Wagh further teaches that this step is followed by allowing the slurry to cure (col. 10, line 1).

Regarding Claim 9, Wagh teaches heating at 100°C (claim 7) where water evaporates, but below a temperature where non-water components would be volatile.

Regarding Claim 13, Wagh teaches use of a reducing agent (boric acid (col. 9, line 54) and an oxidizing agent (MgO, Table 1).

Regarding Claim 27, Wagh teaches heating at 100°C (claim 7) where water evaporates, but this is below a temperature where non-water components would be volatile (Applicant's specification, PG Pub, para. 0045, under 200°C).

Regarding Claim 28, Wagh teaches heating at 100°C (claim 7). Wagh further teaches that the reaction is kept at 100°C (claim 7). It is inherent that water would evaporate. It is also below a temperature where non-water compounds would become volatile (Applicant's specification, PG Pub, para. 0045, under 200°C).

Regarding Claim 32, Wagh teaches use of  $\text{Zn}(\text{OH})_4$  as the reducing agent (abstract) and MgO is an oxidizing agent (col. 3, line 49, Equation 1).

34 Wagh teaches addition of MgO (col. 9, line 44), which will inherently increase the pH of the solution since it is a base.

Regarding Claim 38, Wagh teaches that the waste is a salt waste (col. 4, line 53) and that a neutralizing agent is added (col. 4, line 67, heavy metals or col. 6, line 39, addition of boric acid).

Art Unit: 4162

Regarding Claim 41, Wagh teaches use of a neutralizing material to the waste to partially neutralize the waste before it is combined with oxide and phosphate binders (col. 4, line 67 or col. 9, line 46).

Regarding Claim 43, Wagh teaches use of a H<sub>2</sub> getter agent (table 1, MgO).

Regarding Claim 44, Wagh teaches use of MgO, which is a metal oxide (table 1).

Regarding Claim 45, Wagh teaches use of phosphoric acid, which is an acid that would reduce the pH (table 1).

Regarding Claim 46, Wagh teaches use of a salt to the slurry (table 1, crushed dibasic sodium phosphate).

Regarding Claim 47, Wagh teaches use of Zn(OH)<sub>4</sub> as the reducing agent (abstract) and MgO is an oxidizing agent (col. 3, line 49, Equation 1).

Regarding Claim 48, Wagh teaches addition of a compound that reacts and heats with another compound in the slurry making it exothermic (col. 4, lines 14-16).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 39 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wagh (5645518). Wagh teaches use of the composition with radioactive material (col. 4, line 12), but does not specifically teach use of a beta-absorptive, gamma-absorptive, alpha-absorptive or neutron-absorptive. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a suitable radiation blocker to contain the radiation emitting from the material.

Claim 1, 5, 40 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Singh (5846894). Singh teaches a method of producing stabilizing a waste using chemically bonded phosphate ceramics (abstract). Specifically, Singh teaches preparing a slurry comprising waste, and water ( col. 5, line 14 or col. 3, line 57), an oxide binder (col. 3, line 52 and col. 4, line 28-29) and a phosphate binder (col. 4, line 22 and col. 5, line 28). Singh further teaches that the slurry is allowed to cure to a solid hydrated chemically bonded phosphate ceramic matrix (col. 2, line 57, Claim 1c and col. 5, lines 6-12).

Singh does not teach removing bound water from the solid hydrated chemically bonded phosphate ceramic matrix, but the reference does teach adjusting the water added to the slurry based on the water content of the waste material (col. 5, lines 15-16).

It would have been obvious to one of ordinary skill in the art at the time of the invention to adjust the water content of the solution based on the amount of water already in the waste.

It would further be obvious to one of ordinary skill in the art at the time of the invention to expel overflow water from the slurry in order to form the solid.

Regarding Claim 40, Singh teaches that water from the waste can be adjusted prior to formation of the waste (col. 5, lines 14-16 and 20-21).



Art Unit: 4162

Regarding Claim 42, Singh teaches appropriate modification of the water content in the slurry (col. 5, lines 15-16).

Claims 16, 17, 18, 23, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wagh (5645518) and further in view of Francis (2003/0131759). Wagh teaches a method for stabilizing wastes using phosphate ceramic, water, and an oxide binder, followed by curing (abstract), but does not teach removing water from the waste prior to making the slurry. Wagh does teach heating the composition to 100°C however, which removes water.

Francis teaches a method of stabilizing wastes using a metal oxide, phosphate, reactive material and water (para. 0011). The reference further teaches removing water from the phosphate slime (para. 0034), addition of an oxide binder (para. 0036, 0038), and the addition of a phosphate binder (para. 0038). It would have been obvious to one of ordinary skill in the art at the time of the invention to remove excess water prior to formation of the slurry, as taught by Francis, rather than after or during, as taught by Wagh since certain wastes may not be as stable once heated.

Regarding Claim 17, Wagh teaches heating at 100°C (claim 7), which would evaporate water.

Regarding Claim 18, Wagh does not teach remove water at 90% by weight of the solids, however, it would have been obvious to one of ordinary skill

Art Unit: 4162

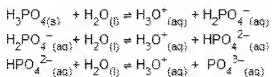
in the art at the time of the invention to remove the amount of water to obtain the desired solidification of the composition.

Regarding Claim 23, Wagh teaches addition of MgO (col. 9, line 44), which will inherently increase the pH of the solution since it is a base.

Regarding Claim 24, Wagh teaches use of a reducing agent Zr(OH)<sub>4</sub> and an oxidizing agent MgO (abstract and table 1).

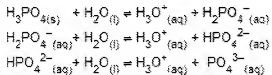
Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over unpatentable over Wagh (5645518) as applied to Claim 16 above, and further in view of Francis (2003/0131759). Wagh teaches a method for stabilizing wastes using phosphate ceramic, water, and an oxide binder, followed by curing (abstract), but does not teach use of KH<sub>2</sub>PO<sub>4</sub>. Wagh does disclose that the oxide binder is MgO, (Mg is a divalent metal) and the phosphate binder is H<sub>3</sub>PO<sub>4</sub> (col. 3, line 49, Equation 1).

It would have been obvious to one of ordinary skill in the art at the time of the invention that H<sub>3</sub>PO<sub>4</sub> naturally disassociates into H<sub>2</sub>PO<sub>4</sub><sup>-</sup> with water. Therefore, use of H<sub>3</sub>PO<sub>4</sub> is equivalent to use of KH<sub>2</sub>PO<sub>4</sub> (col. 4, lines 14-16, dilute phosphoric acid or acid phosphate solutions).



Claims 30, 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wagh (5645518). Wagh teaches a method for stabilizing wastes using phosphate ceramic, water, and an oxide binder, followed by curing (abstract), but Wagh does not teach that the phosphate binder is  $\text{KH}_2\text{PO}_4$ , Wagh does disclose that the oxide binder is  $\text{MgO}$ , ( $\text{Mg}$  is a divalent metal) and the phosphate binder is  $\text{H}_3\text{PO}_4$  (col. 3, line 49, Equation 1).

It would have been obvious to one of ordinary skill in the art at the time of the invention that  $\text{H}_3\text{PO}_4$  naturally disassociates into  $\text{H}_2\text{PO}_4^-$  with water. Therefore, use of  $\text{H}_3\text{PO}_4$  is equivalent to use of  $\text{KH}_2\text{PO}_4$  (col. 4, lines 14-16, dilute phosphoric acid or acid phosphate solutions).



Regarding Claim 33, Wagh teaches adding  $\text{H}_3\text{PO}_4$  (col. 10, line 33) which will inherently reduce the pH of the slurry.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SHENG HAN whose telephone number is (571)270-5823. The examiner can normally be reached on Monday-Thursday, 7:30-5:00pm.

Art Unit: 4162

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on 571 272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Sheng Han  
Examiner  
Art Unit 4162

/Jennifer McNeil/  
Supervisory Patent Examiner, Art Unit 4162